Aero Design Ltd.

Work Order Control Sheet

Work Order#: 2017-182 **Date Opened:** 03 November 2017 **Title:** Fabrication

Aircraft OEM: Eurocopter **Aircraft Model:** AS350/355 **Product Type:** Cargo Basket Body **Product Model:** XL Attach Hoops **Quantity:** ~~20~~ 30 JC

Work Order Contents

	Initial or N/A
Work Order/Build Sheets (Procedures Provided)	JC
Additional Work Sheets (Standard Practice)	N/A
Drawings (See List Below)	JC
Parts Distribution Sheet	JC.
Sub Component Tags	N/A
~~Completed Certification (Original)~~ Traceability	JC.
Time Sheet (R&D)	N/A
Notes	N/A

Build Sheet Contents

Tasks Initialled	JC.
Dual Inspections Initialled	N/A

Drawing List

Drawing #	Rev #	Description	Initial or N/A
94023	1	Attach hoop	JC
84262	2	HANDLE PROV.	JC.

Component Completion

	As Instructed
Quantity Complete on This Work Order	30
Quantity Incomplete on This Work Order	N/A
Further Processing Required Before Release	N/A
Release to Stock as Components	N/A

~~Certification~~ Traceability

	Initial or N/A
Form One Completed	N/A
Serviceable (Green) Tag Completed	N/A
In Process (Yellow) Tag Completed	N/A
Unserviceable (Red) Tag Completed	N/A
Parts ~~Tracking Tags (White) Completed~~ Marked	dR
Parts Placed in Stores for Distribution	JC.

Additional Documentation

	Initial or N/A
Documentation of a minor change	N/A
Non-Conformance Report Required	N/A
Service Difficulty Report Required	N/A

Billing

Local (Aero Design)	JC
Research and Development	N/A
Third Party	N/A

Traveller

Work performed by:	Print: J. FRANCIS / J. RERVÉ	Sign: [signature]	SCA: A001	Date: 15 DEC 2017
ICC / Dual Inspection preformed by:	Print: N/A	Sign:	SCA:	Date:
Work Order closed by:	Print: J. CLARKE	Sign: [signature]	SCA: A002	Date: 15 DEC 2017

Aero Design Ltd.

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Phone: 604-483-2376 Fax: 604-483-2372 E-mail: info@aerodesign.ca

AMF 73-04

Nomenclature: Stud No. of pieces: 100

Manufacturer: Aero Design Ltd.

Part No.: 94023-07 Serial/Batch No.: NSN

TTSN: NP TSO: N/A Rem.: N/A

Work Order No.: 2015-108

Remaining Tasks to be Performed: Install in Mount Hoops

Signature:

Date: 16 Oct 15 Lic. No. / SCA AD-05

Form# 20.E.03 Rev. 1 24 April 2014

In Process

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AMF 73-04

In Process

Remarks

Material PO# 15015

20 removed for further machining 5 Oct 17 dk

dk

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AMF 73-04

Nomenclature: STUD No. of pieces: 4

Manufacturer: AERO DESIGN LTD.

Part No.: 94023-07 Serial/Batch No.: PO 15039

TTSN: NP TSO: N/A Rem.: N/A

Work Order No.: 2017-182

Remaining Tasks to be Performed: NONE

Signature: [illegible]

Date: 25 NOV 2017 Lic. No. / SCA A1002

Serviceable

Form# 20.E.02 Rev. 1 24 April 2014

2017-182

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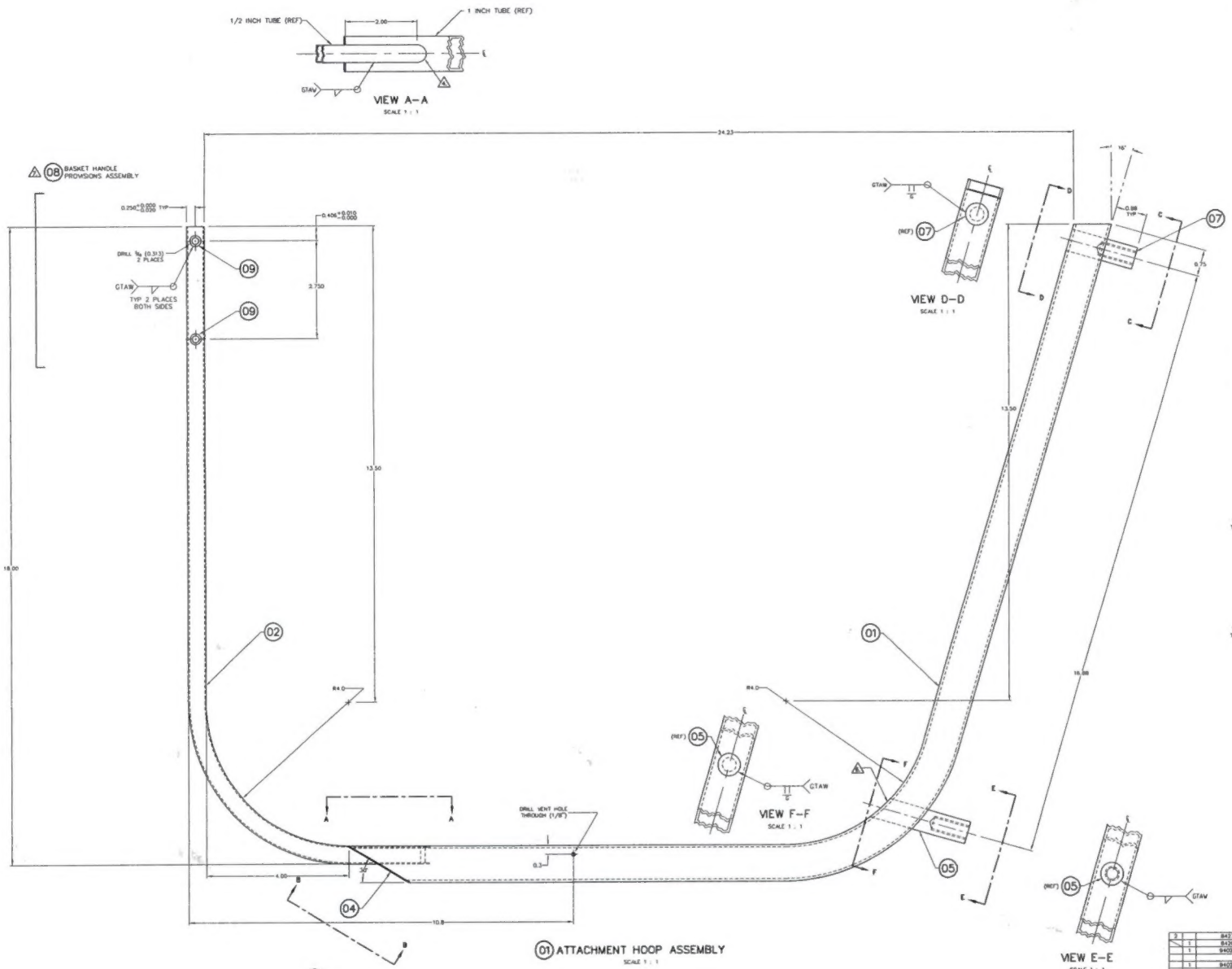
REV.	DESCRIPTION OF CHANGE	INITIALS	DATE
0	INITIAL ISSUE		
1	TITLE BLOCK UPDATED; ITEM #5 UPDATED; 84262 HANDLE PROVISIONS ADDED	BJC	11/07/2014



NOTES

1. REMOVE ALL BURRS AND BREAK SHARP EDGES.
2. (REMOVED)
3. WELDING OF 4130 STEEL TO BE COMPLETED BY GTAW METHOD TO AWS2685C. WELDING ROD SHALL CONFORM TO AWS ER70S-2 OR EQUIVALENT.
4. MILL SLOT INTO 1" TUBE AS SHOWN. CONTOUR END OF 1/2" TUBE TO MINIMIZE GAP BETWEEN 1" TUBE AND ITEM 1/2" TUBE.
5. ADJUST SLOT OF CAP (76423-04) TO FIT AS REQUIRED.
6. CUT AWAY PORTION OF STUD (94023-05) FLUSH TO INSIDE SURFACE OF 1" TUBE AS SHOWN.
7. BASKET HANDLE PROVISIONS ARE INSTALLED IN ACCORDANCE WITH AERO DESIGN DRAWING 84262. DIMENSIONS AND PARTS SHOWN ARE FOR REFERENCE ONLY.

07 QTY	01 QTY	PART NO.	ITEM	DESCRIPTION	MATERIAL	MATERIAL SPEC	STOCK SIZE
2		84272-01	06	BUSHING			
	1	84262-01	08	BASKET HANDLE PROVISIONS ASSEMBLY			
	1	94023-07	07	STUD	MILD STEEL	AISI 1010/1020	ø0.63 ROD
			06				
	1	94023-05	05	STUD	MILD STEEL	AISI 1010/1020	ø0.63 ROD
	1	76423-04	04	CAP			
	A/R		03	TUBE 1/2IN	4130 STEEL COND. N	MIL-T-6736	0.5 X 0.035 SOR TUBE
	A/R		02	TUBE 1IN	4130 STEEL COND. N	MIL-T-6736	1 x 0.065 SOR TUBE
		94023-01	01	ATTACHMENT HOOP ASSEMBLY			

LIST OF MATERIALS

APPROVALS		DATE
DRAWN:	R. RATHWELL	05 AUG 11
CHECKED:	E. BURGON	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:

DECIMALS		ANGLES
X.XXX	±0.010	±1/2°
X.XX	±0.03	
X.X	±0.1	

AERO DESIGN LTD.
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EUROCOPTER AS350 & AS355 SERIES
QUICK RELEASE CARGO BASKET
ATTACHMENT HOOP ASSEMBLY

SCALE 1 : 1	DWG. SIZE	DWG. NO	REV
SHEET 1 OF 1	A0	94023	1

2017-182

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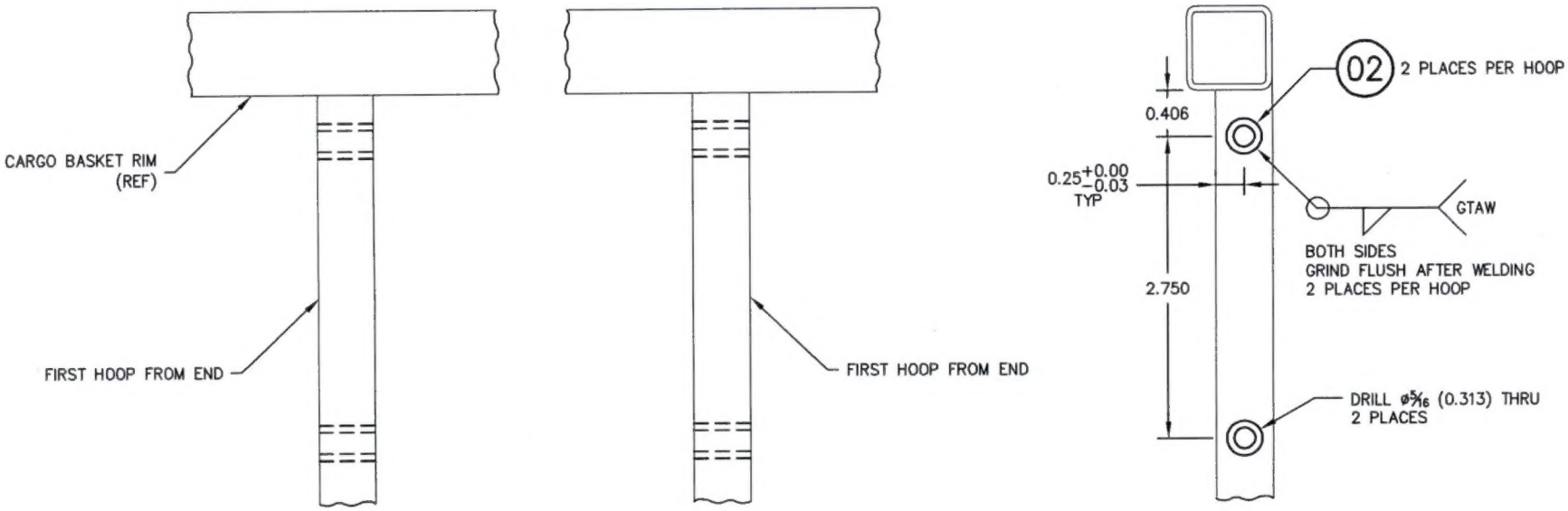
REV.	DESCRIPTION OF CHANGE	INITIALS	DATE
0	INITIAL ISSUE – CREATED FROM 36262	BJC	03/11/2009
1	CHANGE LOCATION OF BUSHINGS	BJC	29/09/2011
2	UPDATED TITLE BLOCK, MOVE LID PROVISIONS TO 84263	BJC	14/02/2014



01 BASKET HANDLE PROVISIONS ASSEMBLY

PROVISIONS TO BE INSTALLED IN HOOPS BEFORE ASSEMBLY TO BASKET RIM

NOTES:

1. REMOVE ALL BURRS AND SHARP EDGES.
2. WELDING TO BE COMPLETED BY GTAW METHOD TO AMS2685C USING ROD CONFORMING TO ER70S-2 OR EQUIVALENT.

QTY	PART NO.	ITEM	DESCRIPTION
4	84272-01	02	BUSHING
	84262-01	01	BASKET HANDLE PROV. ASSY
01	LIST OF MATERIALS		

APPROVALS		DATE
DRAWN:	JEFF CLARKE	03 NOV 2009
CHECKED:	E. BURGOIN	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ON:

DECIMALS		ANGLES
X.XXX	±0.010	±1/2°
X.XX	±0.03	
X.X	±0.1	

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HELICOPTER CARGO BASKET
BASKET HANDLE PROVISIONS ASSEMBLY

SCALE 1 : 1	DWG. SIZE	DWG. NO.	REV.
SHEET 1 OF 1	A3	84262	2

CARGO BASKET HOOP FABRICATION - 94023

General

These instructions apply to cargo basket attachment hoop 94023-01. Refer to the following drawings, at the current revision, for dimensions and details:

94023, Revision 0 – Attachment Hoop > 30
84262, Revision 1 – Handle Bracket Assembly

Work Order: 2017-182

Date Open: 03 Nov. 2017

Complete
(initial or SCA #)

1. ½ Hoop Fabrication – ½" hoop JF.
    a. Cut ½" x 0.035 material to 23.0", square ends.
    b. Record material PO on attached material list.
    c. De-burr cut ends using a sanding disc on a die-grinder or disc sander.
    d. Remove writing on tubes with acetone and scotch bright.
    e. Mark tube 13" from end.
    f. On the hoop bending fixture, slide stock tube through bending die with the 13" to the right.
    g. Rotate bending arm clockwise until tube is secure, ready to bend. Ensure tube remains tight to upper stop.
    h. Pull bending arm clockwise until stop is reached. Pull slowly with consistent pressure.
    i. Check tube bend for square using a hoop jig or carpenters square.
    j. Check for:
        i. hoop height: 18" (Outside to outside)
        ii. adjust upper stop for height if required

2. ½ Hoop Machining – ½" hoop – Handle Provisions 84262-01 CB
    a. Start with ½" half hoop from step 1.
    b. Setup manual milling machine with specific hoop vise jaw. Set XY 0 on far, right edge of jaw (end of hoop).
    c. Drill 2 places, 5/16" (0.313) holes using 5/16" (#4) centre drill through both sides in accordance with drawing. Run at 500 RPM. Apply a few drops of Rapid-Tap cutting oil to each location before drilling.
        i. locate 0.23" from edge (within tolerance specified on drawing).
    d. Wipe or blow off cutting oil and de-burr with scotch-brite disc on die-grinder.
    e. Tag in process hoop(s) and place into stock.

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CARGO BASKET HOOP FABRICATION - 94023

Complete
(initial or SCA #)

3. ½ Hoop Fabrication – 1" hoop JR.
   a. Cut 1" x 0.065 material to 33.5", on end 60 degrees, one end @ 16 degrees. 33.25" distance is short edge of 16 deg to long edge of 60 deg.
   b. Record material PO on attached material list.
   c. De-burr cut ends using a sanding disc on a die-grinder or disc sander.
   d. Remove writing on tubes with acetone and scotch bright.
   e. Mark tube at 14 3/16" from long edge of 16 degree end.
   f. Set lower stop to 101 degrees
   g. Slide stock tube through bending die up to mark. Rotate bending arm clockwise until tube is secure, ready to bend. Ensure tube remains at mark.
   h. Slide shim all the way forward on bender to secure tube in die
   i. Using a long snipe tube, pull bending arm clockwise until stop is reached. Pull slowly with consistent pressure.
   j. Check tube bend for angle using hoop jig. Adjust stops if required.
   k. Check for:
      i. hoop height from jig
      ii. adjust mark for height if required
      iii. bottom length
   l. De-burr cut end using a sanding disc on a die-grinder or disc sander.

4. ½ Hoop Machining – 1" hoop WG JC
   a. Start with 1" ½ hoop as stock.
   b. Setup manual milling machine with standard steel vise jaws. Insert hoop into vise flat on bottom of vise, 16 degree side on right. Set XY 0 on far, right edge of hoop (end of hoop). Shift X along hoop 0.75" and set X 0. Shift Y -0.5". Set stop against end of tube.
   c. Drill two places, 5/8" (0.625) holes using 5/8" (#7) centre drill through both sides in accordance with drawing. Apply a few drops of Rapid-Tap cutting oil to each location before drilling.
   d. Wipe or blow off cutting oil and de-burr with scotch-brite disc on die-grinder.
   e. Set tube in vise with 60 degree end on right.
   f. Using ½" coated carbide end mill, mill slot 2.25" deep (edge to edge, 2.0 edge to centre). Apply a bead of Rapid-Tap cutting oil along cut line before milling.
   g. Wipe or blow off cutting oil and de-burr with scotch-brite disc on die-grinder.
   h. Tag in process hoop(s) and place into stock.

5. Joint Preparation WG JC
   a. Set 1" hoop in hoop jig. Insert ½" hoop into 1" hoop, against side stop of jig. Mark slot location in 1" hoop onto ½" hoop. Trim ½" hoop with vertical bandsaw if required, and shape to match slot with disc sander.
   b. Insert one 94023-07 lug (flat end) at top and 94023-05 lug (angled end) at bottom into holes in 1" hoop. Seat top lug flush with inboard face of tube using a C-clamp or vise. Attach 16 7/8" spacing jig with 3/8-24 bolts to lugs and space jig 7/8" out from hoop. Mark 94023-07 lug and trim or grind to fit.

6. Welding – Lugs

AD 73-04 09

2017-182

CARGO BASKET HOOP FABRICATION - 94023

Complete
(initial or SCA #)

a. Insert one 94023-07 lug (flat end) at top and 94023-05 lug (angled end) at bottom into holes in 1" hoop. Seat flush with inboard face of tube using a C-clamp or vise. Attach 16 7/8" spacing jig with 3/8-24 bolts to lugs and space jig 7/8" out from hoop.
b. TIG weld all around both sides of lugs. 2 places. Grind angled lug into radius of hoop before welding.
c. Record lug and welding rod PO/WO on attached material list. AD 73-04 05

7. Welding – Handle Bushings – 84262-01
   a. Insert 84271-01 bushings into ½" hoop prepared in step 2. above.
   b. TIG weld bushing both sides, 2 bushings per hoop.
   c. Record bushing and welding rod PO/WO on attached material list. AD 73-04 05

8. Welding – Hoop Assembly
   a. Insert 1" hoop from step 6 and ½" hoop from step 7 into hoop jig. Seat ½" hoop into slot in 1" hoop.
   b. Tack weld hoops together, minimum 4 places, to hold hoop together to complete welds out of jig.
   c. TIG weld around ½" hoop in slot.
   d. Cap ½" – 1" tube joint with 76423-04 cap. TIG weld around cap.
   e. Record cap and welding rod PO/WO on attached material list.

9. Finishing and Inspection
   a. Run 3/8-24 tap through welded lugs. JC
   b. Grind inside surfaces flush at lugs and slot in 1" tube.
   c. Inspect hoop for conformity to drawing.
   d. Tag complete and inspected hoop(s) and place into stock.

Aero Design
Parts Distribution Sheet

WO# 2017-182

From PO or WO #	Quantity	Description	Part Number	For WO #
17082	2 2/3 length	1/2" 4130 wall tube		2017-182
17038	1/3 length	1" 4130 wall tube		2017-182
17082		1" 4130 tube		2017-182
15035	30	Tube Cap	76423-04	2017-182
16070	30	Bushings	84272-01	2017-182
16078		.035 ER70S2	N/A	2017-182

Work Order: 2017-182

Date Opened: 03 Nov 2017

Material Tracking Sheet
Eurocopter AS350 / AS355
Extra Large Hoops Fabrication

Ass'y Step	Qty	Detail Drawing	Part Number	Description	Material	PO/WO
	N/A		**94030-01**	**Hoop - standard**	4130 Steel, ½" x 0.035 Sqr. Tube	~~17082~~ JF.
	30		**94023-01**	**Hoop - attachment**		
Step 1				*1/2 Hoop Fabrication - 1/2" hoop*		
	. 1		--	1/2" Tube - hoop	4130 Steel, ½" x 0.035 Sqr. Tube	17082
Step 2				*Machining*	*None*	
Step 3				*1/2 Hoop Fabrication - 1" hoop*		
	. 1		--	1" tube - hoop	4130 Steel, 1" x 0.065 Sqr. Tube	17038/17082
Step 4				*Machining*	*None*	
Step 5				*Joint Preparation*	*None*	
				Welding		
Step 6	. 1		94023-05	Stud	1018 Mild Steel, 5/8" Dia.	2015-108
	. 1		94023-07	Stud	1018 Mild Steel, 5/8" Dia.	2015-108
Step 7	. 2	84262	84272-01	Bushing	4130 Steel, 5/16" x 0.058 Rnd. Tube	2016-134
Step 8	. 1		76423-04	Cap	1018 Mild Steel, 0.050" Sheet	15035
	. A/R		--	Welding Rod	ER70S-2	16078
Step 9				*Finishing and Inspection*	*None*	

BUSHING/TUBE/GUIDE/THREADED LUG

General

These general instructions apply to bushings, tubes and similar round components used for Aero Design cargo baskets, mounting beams, and other products. Refer to the drawing, at the current revision, for dimensions and details. Selected drawings with applicable parts, drawings not listed may also apply:

69830 – Bell 206L/407 Mounting Beam
76630 – Bell 206L/407 High Mounting Beam
78633 – Airbus AS350 Aft Beam
78634 – Airbus AS350 Forward Beam
49215 – Lid Prop Bushing
49216 – Lid Prop Bushing
76423 – Airbus AS350 Attachment Hoop
94023 – Airbus AS350 XL Attachment Hoop
82715 – Airbus AS350 Short Step Assembly
82733 – Airbus AS350 Short Step Bracket
36274 – Handle Lever Bushing
36275 – Handle Support and Bushing

Work Order: 2017-182 Batch Quantity: 4 **Complete** (initial or SCA #)

Date Open: 03 NOV 2017 Part Number: 94023-07

1. Cut stock material: JC

   a. Enter material PO: PO: 15039
   b. Cut stock to length, + 0.03-0.06".
   c. Tag in-progress parts and place on in-progress shelf in machine shop.

2. Turn stock material: JC

CAUTION: Using a lathe requires training and is not to be undertaken without adequate instruction and knowledge of the processes and settings involved. Do not attempt to fabricate parts on the lathe if you are unsure of what is required to safely produce the part.

Note: Not all steps may apply to all parts. Strike out any step(s) that does not apply.
Note: Feeds and speeds are recommended starting point for aluminum, steel, and stainless steel up to 1" in diameter using the appropriate inserts. Adjust for optimal performance and finish.

   a. Face one end flat @ 1000 RPM, cross feed @ 0.01"/rev roughing, 0.004"/rev finishing.
   b. Turn outside @ 1000 RPM, feed @ 0.01"/rev roughing, 0.004"/rev finishing.
   c. Centre drill and drill at 300 RPM (up to 5/16", reduce for larger sizes).
   d. Setup stop and face other end to length @ 1000 RPM.
   e. De-burr outside with a file and inside with a de-burring tool at 300 RPM.
   f. Tag complete parts.